

LOCKING DEVICE OF A CASING

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a locking device of a casing. More particularly,
5 the present invention relates to a locking device of a casing applied to an information product such as a notebook, a PDA, a cell phone and the like.

2. Description of Related Art

Referring to Fig. 1, a first prior art-locking device includes buckling matching
portions 20a protruding from edges on the same side of a cover 31a and a seat 32a of
10 a casing, respectively, and two movable buckles 10a located relative to the buckling matching portions 20a for the closing and opening the casing.

The first prior art-locking device is operated by first moving the two movable
buckles 10a, respectively, in opposite directions and then to lift vertically the cover
31a, such that the case is opened. The direction of the lifting of the cover 31a doesn't
15 correspond to the motion of the movable buckles 10a, and is not ergonomically pleasing. Furthermore, the alignment between the movable buckle 10a and the buckling matching portion 20a often doesn't add to easy use of the prior art-locking device because of slides between the buckling matching portions 20a.

As shown the Fig. 2 and Fig. 2A, a second prior art-locking device includes an
20 upper buckling mechanism 20b disposed on a cover 31b of a casing and a lower buckling mechanism 10b disposed on a seat 32b of the casing and matching the upper buckling mechanism 20b for buckling and locking to each other.

The upper buckling mechanism 20b has an upper hook 21b, while the lower buckling mechanism 10b has a release button 11b and a slot 12b relative to the upper

hook 21b. However, complex components and assembly steps are expensive to manufacture. Further, operation of the second prior art-locking device is ergonomically displeasing, involving first inwardly pushing the release button 11b and then vertically lifting the cover 31b to open the casing, such that the direction of the lifting of the cover 31b doesn't correspond to the motion of the release button 11b.

Hence, the examples of prior art mentioned above obviously have disadvantages and an improved locking device is needed.

SUMMARY OF THE INVENTION

A primary object of the present is to provide a locking device in which the cover-lifting direction corresponds to the rotation of the roller so that a direction of applied force is continuously unchanged for improved ergonomics while simultaneously simplifying assembly steps to reduce manufacturing costs.

A locking device according to the present invention is applied in a casing having a cover and a seat for opening and closing thereof. The locking device includes a recess formed on an edge of the seat, a buckle downwards protruding from the cover and matching the recess, and a roller parallel-disposed in the recess and pivoted to the seat. The buckle has an accurate face that smoothly presses against an upper slot of the roller for the closing and opening of the casing. A direction of applied force is continuously unchanged and thus ergonomic.

To provide a further understanding of the invention, the following detailed description illustrates embodiments and examples of the invention. Examples of the more important features of the invention thus have been summarized rather broadly in order that the detailed description thereof that follows may be better understood, and in order that the contributions to the art may be appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will

form the subject of the claims appended hereto.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings included herein provide a further understanding of the invention. A brief introduction of the drawings is as follows:

5 FIG. 1 is a perspective view of a first prior art-locking device;

FIG. 2 is a perspective view of a second prior art-locking device;

FIG. 2A is an enlarged view of the second prior art-locking device;

FIG. 3 is a perspective view of one embodiment of a locking device;

10 FIG. 4 is a perspective view of a locking device according to the present invention;

FIG. 5 is a side elevational view of the cross-section of a locking device according to the present invention;

FIG. 6 is a perspective view illustrating buckling of the locking device of the present invention;

15 FIG. 7 is a side elevational view of the cross-section illustrating buckling a locking device according to the present invention;

FIG. 8 is a perspective view of a first embodiment of the roller surface of the locking device according to the present invention; and

20 FIG. 9 is a perspective view of a second embodiment of the roller surface of the locking device according to the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to Fig. 3 and Fig. 4, a locking device 1 according to the present invention is applied in a casing 2 having a cover 21 and a seat 22 for the opening and closing of the casing. The seat has a hinging edge 23 pivotally hinged to the cover

21 and an edge in an opposite direction of the hinging edge 23. The locking device 1 includes a roller 11, a buckle 12 and a recess 13. The recess 13 is formed on the edge of the seat 22, the buckle 12 downwards protruding from the cover 21 and matching the recess 13. The roller 11 is parallel-disposed in the recess 13 and
5 pivoted to the seat 22.

Reference is made to Fig. 5, in which a diameter (a) of the roller 11 is larger than a depth (b) of the recess 13 for partially protruding the roller 11 out of the seat 22. The roller 11 has an upper slot 111 relative to the buckle 12 and a pattern 113 formed on an outer surface thereof. Force exerted on the pattern 113 by force exerted rotates
10 the roller 11 upwards to lift the cover 21 and open the casing 2.

Reference is made to Fig. 6 and Fig. 7, in which the buckle 12 has a projecting portion 121 at an end thereof and an accurate face 122 on an inner side facing the hinging edge 23. To close the casing 2, the projecting portion 121 of the buckle 120 downwards hooks the upper slot 111. To open the casing 2, the accurate face 122 of
15 the buckle 120 is moved upward and smoothly against the upper slot 111 to slide out of the upper slot 111 when the cover 21 is lifted.

The roller 11 further includes an inner recess 112 to contain the projecting portion 121 of the buckle 120. The roller 11 further includes resilient elements disposed on each side thereof for recovering the roller 11 to a predetermined position
20 when the roller 11 is rotated to release the buckle 12.

Reference is made to Fig. 8 and Fig. 9, in which the pattern 113 is alternatively arranged to be rough and uneven on the outer surface and the pattern 113 includes parallel grooves and embossing arrayed with a predetermined distance therebetween and in an order.

25 The present invention utilizes the roller 11 rotated in a direction corresponding to an opening direction of the cover 21 to identify the direction operation and achieve an

ergonomic product, and further utilizes simple components and assembly steps to reduce manufacturing costs.

It should be apparent to those skilled in the art that the above description is only illustrative of specific embodiments and examples of the invention. The invention
5 should therefore cover various modifications and variations made to the herein-described structure and operations of the invention, provided they fall within the scope of the invention as defined in the following appended claims.